


Lung cancer screening-A community experience

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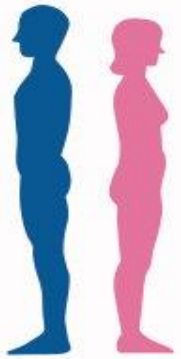
SAINT FRANCIS MEDICAL CENTER

Medicine to the Highest Power

Cancer statistics, 2011

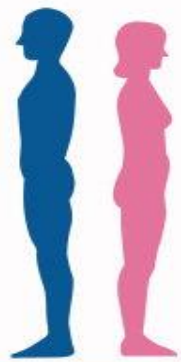
Estimated New Cases*

Males			Females		
Prostate	240,890	29%	Breast	230,480	30%
Lung & bronchus	115,060	14%	Lung & bronchus	106,070	14%
Colon & rectum	71,850	9%	Colon & rectum	69,360	9%
Urinary bladder	52,020	6%	Uterine corpus	46,470	6%
Melanoma of the skin	40,010	5%	Thyroid	36,550	5%
Kidney & renal pelvis	37,120	5%	Non-Hodgkin lymphoma	30,300	4%
Non-Hodgkin lymphoma	36,060	4%	Melanoma of the skin	30,220	4%
Oral cavity & pharynx	27,710	3%	Kidney & renal pelvis	23,800	3%
Leukemia	25,320	3%	Ovary	21,990	3%
Pancreas	22,050	3%	Pancreas	21,980	3%
All Sites	**822,300**	**100%**	**All Sites**	**774,370**	**100%**



Estimated Deaths

Males			Females		
Lung & bronchus	85,600	28%	Lung & bronchus	71,340	26%
Prostate	33,720	11%	Breast	39,520	15%
Colon & rectum	25,250	8%	Colon & rectum	24,130	9%
Pancreas	19,360	6%	Pancreas	18,300	7%
Liver & intrahepatic bile duct	13,260	4%	Ovary	15,460	6%
Leukemia	12,740	4%	Non-Hodgkin lymphoma	9,570	4%
Esophagus	11,910	4%	Leukemia	9,040	3%
Urinary bladder	10,670	4%	Uterine Corpus	8,120	3%
Non-Hodgkin lymphoma	9,750	3%	Liver & intrahepatic bile duct	6,330	2%
Kidney & renal pelvis	8,270	3%	Brain & other nervous system	5,670	2%
All Sites	**300,430**	**100%**	**All Sites**	**271,520**	**100%**



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EPIDEMIOLOGY

- **Estimated new cases and deaths** from lung cancer (non-small cell and small cell combined) in the United States in 2011:
- New cases: 221,130
- Deaths: 156,940

RISK FACTORS

- **Smoking 20-30 pack years**
- Radon exposure
- Chronic obstructive pulmonary disease or pulmonary fibrosis
- Survivors of lung cancer, lymphomas, cancer of the head and neck, and smoking-related cancers
- Occupational exposures identified as carcinogens targeting the lungs include silica, cadmium, asbestos, arsenic, beryllium, chromium (VI), diesel fumes, and nickel

Background

- A number of observational single arm lung cancer screening trials with CT were carried out in the 1990s and during the past decade.

- These demonstrated that low-dose CT scans could identify cancers at early treatable stages and that survival was prolonged

- The NLST was launched in 2002 and it is the first randomized controlled trial that has published definitive results.

National lung cancer screening trial

- Enrolled 53,454 current or former heavy smokers from 33 sites and coordinating centers across the United States.

Two ways of detecting lung cancer:

- Low dose helical ct
- Chest xray

Results

- Participants who received low-dose helical CT scans had a 20.0 percent lower risk of dying from lung cancer than participants who received standard chest X-rays.

Who should be screened?

- Ages 55-74 with a 30 pack year heavy smoking history and who currently smoke or have quit in the last 15years

NCCN, American Cancer Society, American Society of Clinical Oncology, American College of Chest physicians, American College of Lung physicians

- Ages 55-77 with a 30 pack year heavy smoking history and who currently smoke or have quit

Medicare & Medicaid services in 2015

- Ages 55-80 with a 30 pack year smoking history and who currently smoke or have quit in the last 15 years.

U.S. Preventive Services Task Force in 2013

RISK OF RADIATION EXPOSURE

50% of the total annual average U.S. individual's radiation exposure > natural sources
50% > diagnostic medical procedures

The average annual radiation exposure from natural sources is about 310 millirem (3.1 millisieverts or mSv)

No adverse health effects have been discerned from doses arising from these levels of natural radiation exposure

Computed tomography (CT) scans, which account for about 150 mrem or 1.5mSv. Other medical procedures together account for about another 150 mrem each year.

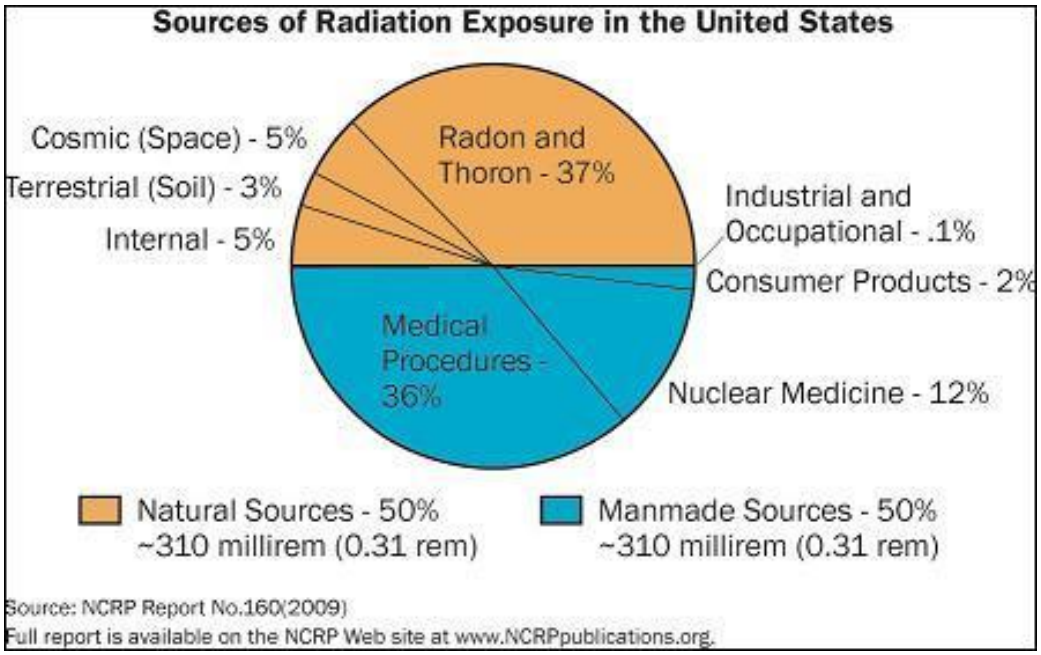
- NRC requires that its licensees limit maximum radiation exposure to individual members of the public to 100 mrem (1mSv) per year, and limit occupational radiation exposure to adults working with radioactive material to 5,000 mrem (50 mSv) per year

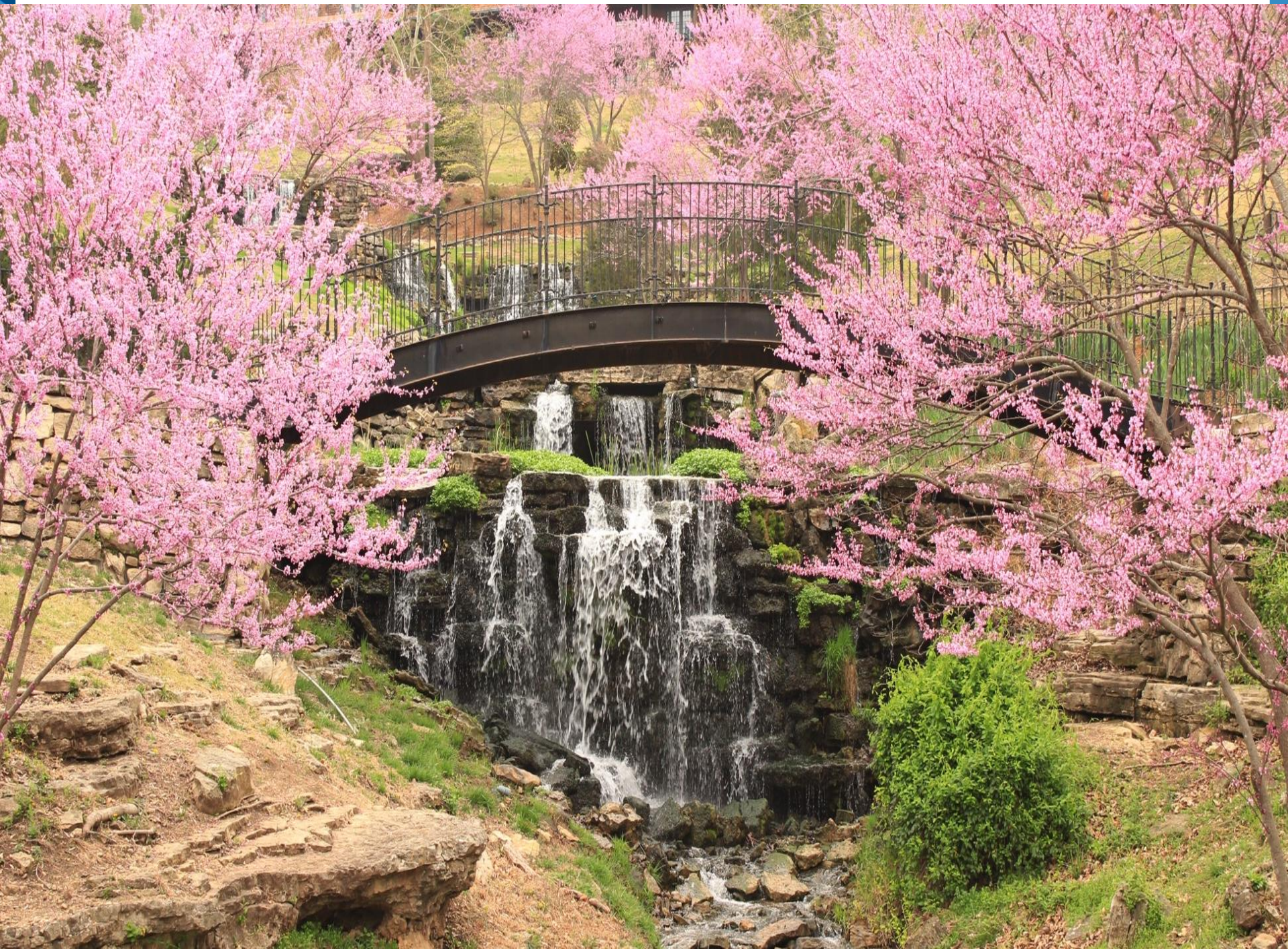
Individuals risk of radiation exposure

Levels of radiation varies with location

People residing in Colorado are exposed to more natural radiation than residents of the east or west coast

Colorado has more cosmic radiation at a higher altitude and more terrestrial radiation from soils enriched in naturally occurring uranium





- Ages 55-74 with a 30 pack year heavy smoking history
- Three annual low dose helical CT scans or CXR
- 40% of patients on the CT arm had an abnormality which was evaluated further with imaging, bronchoscopy and biopsy
- High false positive rates

Important concerns

- Defining the population to be screened
- Cost
- How often?
- Which modality?
- False positives?
- False negatives?

- St. Francis Medical Center is the first in the area to offer this beneficial health exam, which typically costs $300 to $500 and is not always covered by health insurance or Medicare, to its patients.

- Lung cancer screenings are made possible by Saint Francis Foundation, with the goal of earlier detection at more treatable stages for better overall outcomes.

Easy process, expert assessment

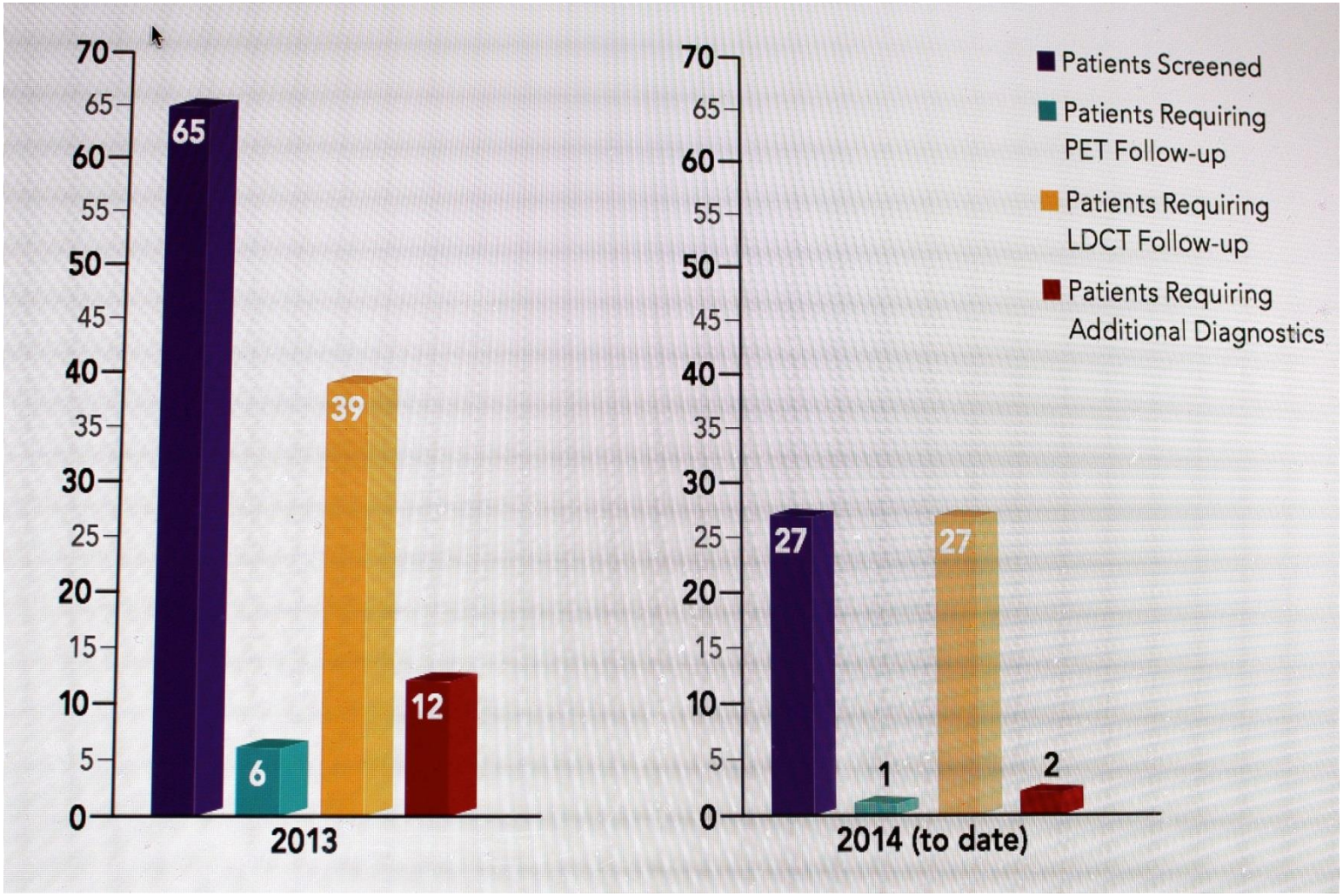
Patients are first prescreened to see if they qualify.

If they do, an initial CT scan is performed. Following the scan, a radiologist and medical oncologist/hematologist at Saint Francis, both review the CT screening, collaborate on its findings and then communicate results to patients free of charge.

Any necessary follow-up care is then billed to the patient's insurance.

All patients are offered tobacco cessation counselling.

Lung Cancer Screening:Results (2013-2014)

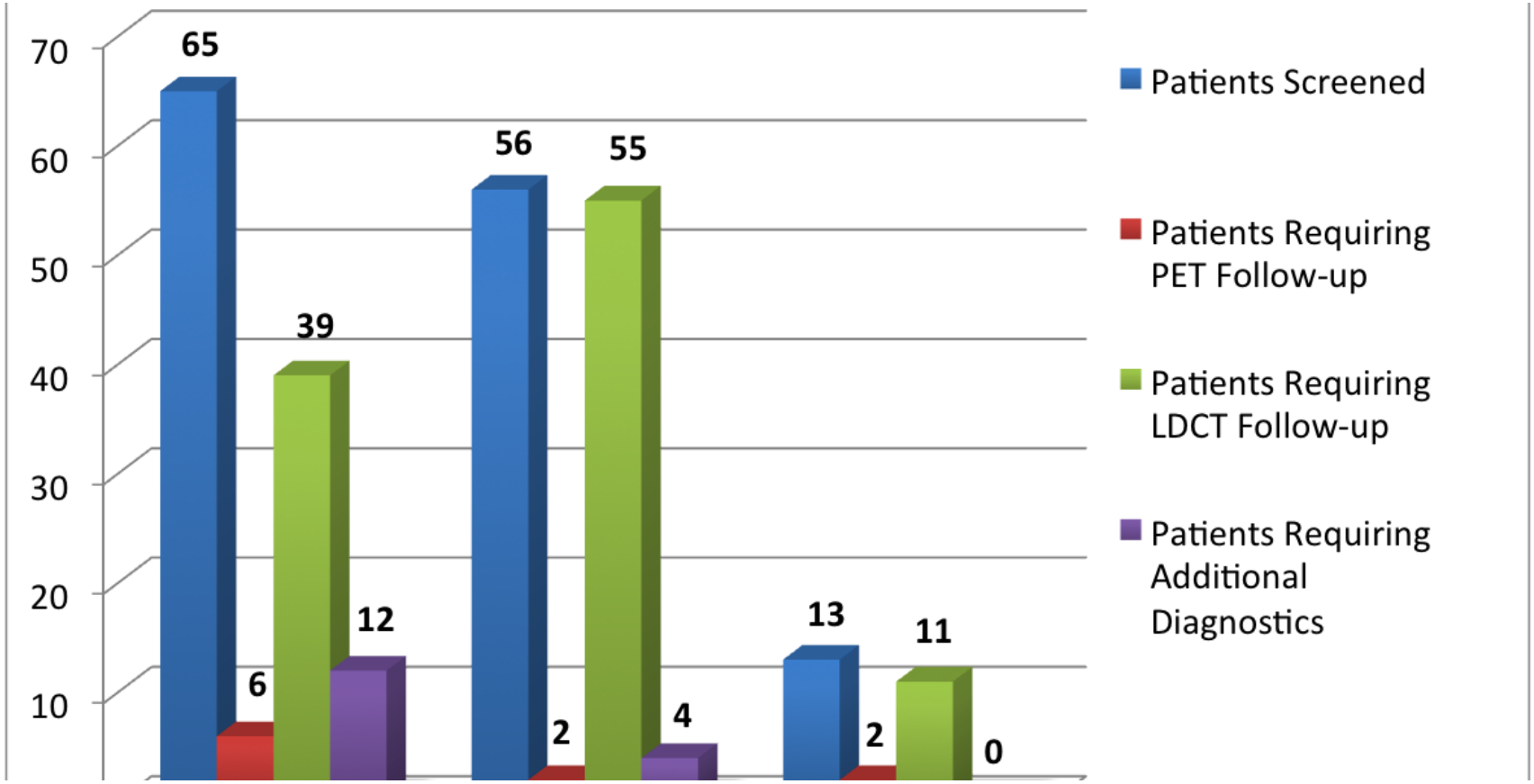


SFMC

Saint Francis Cancer Institute
Lung Screening Results Analysis

Lung Screening Results by Year	No. of Lung Screening Patients	No. of Patients Requiring PET Follow-Up Screening	% of Patients Requiring PET Follow-Up Screening	No. of Patients Requiring LDCT Follow-up Screening	% of Patients Requiring LDCT Follow-up Screening	No. of Patients Requiring Additional Diagnostic Work Up	% of Patients Requiring Additional Diagnostic Work Up
2013	65	6	9.23%	39	60.00%	12	18.46%
2014	56	2	3.57%	55	98.21%	4	7.14%
Q1-2015	13	2	15.38%	11	84.62%	0	0.00%
TOTALS:	***134***	***10***	7.46%	***105***	78.36%	***16***	11.94%

Lung Cancer Screening:SFMC update



Conclusion

- Low dose CT chest to screen for lung cancer is effective in earlier detection.
- Based on the screening data since its inception in April 2013, a significant number of patients needed follow-up screenings such as PET scans, low-dose CT scans or other additional diagnostic workups.
- Without this free screening, lung cancer and other health issues, including aortic aneurysms and breast cancer, would have gone undetected.

Sincere appreciation:

Dr. J Borders-Radiologist

Ms Trinka Hileman, RN, BSN, MBA-
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Ms Kim Smithey-Cancer Registrar